

Application SN 10/656,661
Amendment dated August 1, 2006
Reply to Office Action of February 1, 2006

Amendments to the Drawings

Attached is an annotated set of Figs. 3a-3e and 4a-4h showing the changes applicants propose to make. Before preparing formal drawings, applicants would appreciate the examiner's approval of these changes.

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REMARKS

The foregoing amendments are made to define the invention more clearly. Support for the limitations in the new claims can be found in the original claims. Support for the limitation in new claim 38 regarding the polymer being formed from polymethacrylic acid or sulfonated polyaniline can be found at page 10, lines 25 and 29 of the specification.

The rejection of the claims under 35 U.S.C. §103 is respectfully traversed. Applicants begin by noting that not one reference cited against the claims suggests the very existence of the product of the inventive process, i.e., generally flat thermoplastic polymer microparticles having a predetermined lateral shape. Therefore, it is clear that the motivation to combine the cited references as done in this rejection is not based on an impartial assessment of what they fairly suggest, but rather a hindsight reconstruction of the prior art using applicants' own specification as a guide. What possible reason would one of ordinary skill in the art have to modify the Xie et al. and/or Brewer's processes—both of which produce useful and desirable products—so as to produce a completely new product having no known utility? **HINDSIGHT**, pure and simple.

Applicant's objective in making the present invention was to provide a new approach to making polymer microparticles. As indicated on page 2, line 25 et seq. of the specification, prior techniques for making such microparticles involved various technologies such as spray drying, phase separation and emulsification, all of which produced microparticle products in the shape of bubbles, beads and spheres, i.e., microbeads, microspheres, microbubbles and microcapsules. In accordance with the present invention, applicant rejected these approaches and instead selected a new approach, soft lithography, to produce microparticle products having an entirely new shape, generally flat particles with predetermined lateral configurations such as squares, rectangles and the like. Nothing like this is remotely suggested in the references.

In the particular section of the Xie et al. article relied on by the examiner (pages 160-162), a particular type of organic chemical, a ligand, **chemically reacts with and bonds to** the substrate in such a way that these bonded ligands **self assemble**, i.e., they spontaneously aggregate and organize into stable, well-defined meso-scale structures by noncovalent interactions. See, pages 159 and 161. This portion of Xie et al. obviously has nothing to do with

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the inventive process (or Brewer's process for that matter), neither of which relate to "self-assembly."

A more relevant disclosure in Xie et al. can be found pages 169-171 where "microtransfer molding" (μ TM) is discussed. In this technology, patterned microstructures such as optical waveguides, couplers and interferometers are formed from organic polymers by applying a thin layer of liquid prepolymer onto the patterned surface of an elastomeric mold, placing the mold in contact with a substrate, causing the prepolymer to harden and bond to the substrate, and removing the mold. Although "self-assembly" is not involved here, forming an **integral, unitary** coating that exhibits a **complex pattern** of micro-features is. That being the case, a person of ordinary skill in the art who was seeking a new approach to making discrete polymer microparticles would not be led to this reference, since forming multiple, **discrete** particles of simple shape is the exact opposite of forming an **integral, unitary** coating with a complex shape.

To remedy this deficiency the examiner cites the Brewer patent, which does indeed show forming multiple, separate microstructures. However, a critical feature of the Brewer process is that **conventional etching** techniques (col. 6, lines 16-18), i.e. conventional photolithography techniques, are used to section epitaxial layers 131, 132, 135 into discrete subsections. Given that the entire thrust of the Xie et al. article is to **replace** such conventional techniques with better technology, it is doubtful that a person of ordinary skill in the art would look to the Brewer patent for a suggestion on how to modify Xie's new soft lithography procedures, since Brewer's technology requires the very same conventional technology which the Xie et al. technology was designed to replace.

Another deficiency in Brewer is that its microstructures are **electronic** components such as capacitors, inductors, integrated circuits and the like which are formed by **epitaxially** growing (col. 5, lines 48-50) layers 131, 132, 135 on a substrate made from **semiconductor** materials such as GaAs, InP, etc. (col. 5, line 56 to col. 6, line 13). Brewer's microstructures are not made from polymer materials, which is the focus of applicant's invention as well as the Xie et al. technology. Therefore one of ordinary skill in the art who was seeking a new way of making **polymer** microparticles certainly would not look to Brewer for a suggestion of how this could be done.

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In this connection, the examiner's assertion that Brewer fairly suggests applying his technology to "cell biology" (page 7 of Office Action) merely because he refers to "virtually any device technology or material family" at col. 3, lines 15-18 is unreasonable on its face, applicants believe. Brewer is crystal clear that his process is directed to making electronic components by an epitaxial growing process. See, for example, col. 3, lines 9-13 and col. 5, line 48. Therefore it is also clear that when Brewer refers to "virtually any device technology or material family...[being] **monolithically integrated** into a host substrate" (emphasis added), he is referring to materials which form **electronic devices** by **epitaxial** growing processes, not to every material and device under the sun. The examiner's assertion to the contrary convincingly demonstrates that **hindsight** is the driving force behind this rejection.

Furthermore, an important feature of Brewer's epitaxial growing process is that the atoms forming layers 131, 132, 135 must be contacted with the substrate in such a way they attach to the substrate atom by atom, since this what makes these epitaxially-grown layers exhibit the same crystal structure as the substrate to which they attached. That being the case, a person of ordinary skill in the art of making polymer microparticles would regard the Brewer process as being completely irrelevant to the Xie et al. article, since the coating processes in these two references are the exact opposites of one another. Thus, Xie et al.'s coating process requires that all of the material forming the coating be contacted with the substrate at the same time, i.e., in the form of a liquid polymer or prepolymer coating on the elastomeric stamp, whereas Brewer's coating process requires that the material forming the coating be contacted with the substrate over time (and normally in vaporous form) so that it can attach to the substrate atom by atom thereby **growing** the epitaxial layer. Given that the coating processes of Xie et al. and Brewer are complete opposites of one another, one of ordinary skill in the art would reject the Brewer patent as not having any relevance to Xie et al. at all.

In its recent decision of In re Kahn, ___ F.3d ___ (Fed. Cir. 3/22/2006, No. 04-1616), the Federal Circuit confirmed that rejections under 35 U.S.C. §103 are proper only if the Board (and hence the examiners) articulate viable reasons why a person of ordinary skill in the art **who faced the same problem faced and solved by the applicant** would have been motivated to modify prior art in the manner proposed in the rejection. To this end, the examiner in his office

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action sets out various reasons why he believes a person of ordinary skill in the art would have been motivated to make the modifications he proposes.

However in his analysis, the examiner **ignores** the problem faced by applicant, i.e. finding a new way to make polymer microparticles, and instead postulates an obviously erroneous motivation by construing a statement in the Brewer patent clearly out of the context in which it is made. In addition, the examiner also **ignores** the glaring inconsistencies between Xie et al. and Brewer in terms of

- the materials being processed, i.e., organic polymers versus semiconductor materials,
- coating techniques, i.e., molding versus epitaxial growing, and
- adoption or rejection of conventional photolithography techniques.


Together, these actions convincingly demonstrate that the motivation to combine the Xie et al. article and the Brewer patent as done in all rejections here has been applicants' own disclosure, not what they fairly suggest.

Since it is fundamental that a patent applicant's own disclosure cannot be used against him/her in determining obviousness, all prior art rejections in this case must fail since they are based on the erroneous combination of these two references. Accordingly, withdrawal of all rejections and early issuance of a notice of allowance are earnestly solicited.

If any fee is due with this amendment, please charge our deposit account no. 03-0172.

Respectfully submitted,

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